

Sub D1  
C1  
an effective amount of modifier for enhancing fracture properties of said bond and for assisting in reinforcing said bond, wherein the modifier includes a toughener;

a filler for controlling thermal expansion of said composition and for assisting in reinforcing said bond;

a surface treating agent; and

C1  
a polymerization photoinitiator comprised of a catalytically effective amount of an organometallic complex salt having a metal cation, upon photolysis, said polymerization photoinitiator liberating at least one coordination site and polymerizing the cyanate ester substance, wherein said metal cation in the organometallic complex is selected from the group consisting of elements of Periodic Groups IVB, VB, VIB, VIIB, and VIIIB.

Sub D2  
C2  
2. (AMENDED) The photoinduced polymerizable cyanate ester composition of claim 1, wherein said effective amount of modifier includes a toughening agent comprised of elastomeric units.

3. The photoinduced polymerizable cyanate ester composition of claim 2, wherein said elastomeric units are encapped with reactive functional groups.

4. The photoinduced polymerizable cyanate ester composition of claim 2, wherein said elastomeric units have molecular weights ranging between approximately 500 and approximately 5000.

5. The photoinduced polymerizable cyanate ester composition of claim 1, wherein said effective amount of modifier includes elastomers, said elastomers reacting with said cyanate ester substance upon curing to form an epoxy terminated elastomer.

6. The photoinduced polymerizable cyanate ester composition of claim 1, wherein said cyanate ester substance is solvent free.

*Sub 3*  
*CS*  
(TWICE AMENDED) A process for providing a photoinduced polymerizable cyanate ester composition for use in reinforcing a bond, said process comprising the steps of:  
providing a cyanate ester substance comprised of a cationically polymerizable cyanate ester monomer, a cyanate ester prepolymer, or a mixture of the monomer and prepolymer;  
adding to the cyanate ester substance an effective amount of modifier for enhancing fracture properties of said bond and for assisting in reinforcing said bond, wherein the modifier includes a toughener;  
adding to the cyanate ester substance an effective amount of a filler for controlling thermal expansion of said composition and for assisting in reinforcing said bond;  
adding to the cyanate ester substance an effective amount of a surface treating agent; and  
adding to the cyanate ester substance a polymerization photoinitiator comprised of a catalytically effective amount of an organometallic complex salt having a metal cation, upon photolysis, the polymerization photoinitiator liberating at least one coordination site and curing the cyanate ester substance, wherein said metal cation in the organometallic complex is selected from the group consisting of elements of Periodic Groups IVB, VB, VIB, VIIB, and VIIIB.

Sub 4  
D  
8 (THRICE AMENDED) A lead protective composition comprising the polymerization  
product of:

- CB
- (a) at least one cyanate monomer;
  - (b) a polymerization photoinitiator comprised of a catalytically effective amount of an organometallic complex salt having a metal cation, the polymerization photoinitiator liberating at least one coordinative site and polymerizing the at least one cyanate monomer, wherein said metal cation in the organometallic complex is selected from the group consisting of Periodic Groups IVB, VB, VIB, VIIB, and VIIIB;
  - (c) a filler for controlling thermal expansion of said composition and for assisting in reinforcing said bond;
  - (d) an effective amount of a modifier for enhancing fracture properties of the protective composition as compared to a lead bond formed without a lead protective composition and for assisting in reinforcing said bond, wherein the modifier includes a toughener; and
  - (e) a surface treating agent.

C4<sup>sub 7</sup>  
9. (AMENDED) The lead protective composition of claim 8, wherein said effective amount of toughener includes elastomeric units.

10. The lead protective composition of claim 9, wherein said elastomeric units

are endcapped with reactive functional groups.

11. The lead protective composition of claim 9, wherein said elastomeric units have molecular weights ranging between approximately 500 and approximately 5000.
12. The lead protective composition of claim 8, wherein said effective amount of modifier includes elastomers, said elastomers reacting with said cyanate ester substance upon curing to form an epoxy terminated elastomer.
13. The lead protective composition of claim 8, wherein said surface treating agent is selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, N(2-aminoethyl)3-aminopropyl methyl dimethoxysilane, 3-aminopropylethoxysilane, 3-glycidoxypropyl trimethoxysilane, 3-glycidoxypropyl methyl dimethoxysilane and combinations thereof.
14. The photoinduced polymerizable cyanate ester composition of claim 1, wherein the surface treating agent is selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, N(2-aminoethyl)3-aminopropyl methyl dimethoxysilane, 3-aminopropylethoxysilane, 3-glycidoxypropyl trimethoxysilane, 3-glycidoxypropyl methyl dimethoxysilane and combinations thereof.
15. The photoinduced polymerizable cyanate ester composition of claim 1, wherein

an amount of the surface treating agent includes from about 3 to about 15 parts based on 100 parts of the composition.

16. The photoinduced polymerizable cyanate ester composition of claim 1, wherein said toughening agent is selected from the group consisting of hydroxy-terminated polysulfone oligomers elastomers, rubber, epoxy terminated elastomer, and combinations thereof.

17. The photoinduced polymerizable cyanate ester composition of claim 16, wherein said polysulfone oligomers have molecular weights ranging between approximately 500 and approximately 5000.

18. The process of claim 7, wherein the adding of a surface treating agent further comprises the agent selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, N(2-aminoethyl)3-aminopropyl methyl dimethoxysilane, 3-aminopropylethoxysilane, 3- glycidoxypropyl trimethoxysilane, 3-glycidoxypropylmethyl dimethoxysilane and combinations thereof.

#### **Remarks**

Claims 1-18 are pending in the application. The Examiner objected to claims 1 and 8 under 35 U.S.C. § 132 alleging introduction of new subject matter. Claims 1-6 and 8-18 were rejected under 35 U.S.C. § 112, first paragraph, allegedly requiring enablement for surface

treatment of filler. The Examiner rejected claims 1-12 and 16 and 17 under 35 U.S.C. § 103(a) as allegedly obvious over Gelorme et al. (5,464,726) in view of Christie et al. (5,250,848). The Examiner rejected claims 1-12, 16 and 17 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Ayano et al. (4,383,903) in view of Christie et al. (5,250,848). The Examiner rejected claims 1-12, 16 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Gaku et al. (4,533,727) in view of McCormick et al (5,215,860) and Shimp (4,709,008) and further in view of Christie et al. (5,250,848). Applicant respectfully traverses the 35 U.S.C. § 132 objection, the 35 U.S.C. § 112, first paragraph and 35 U.S.C. § 103(a) rejections in the following discussion.

35 U.S.C. § 132

The Office objected to claims 1 and 8 under 35 U.S.C. § 132 alleging introduction of new subject matter. Applicants respectfully traverse the Examiner's objection because claims 1 and 8 state *inter alia* a ... composition comprising ... a surface treating agent. Applicants respectfully assert that the specification discloses "a surface treating agent." See Applicants' specification, / page 24, lines 18-23. Applicants respectfully assert that the composition of claims 1 and 8 comprising a surface treating agent is not new matter because the surface treating agent is disclosed in Applicants specification.

35 U.S.C. § 112, first paragraph

The office rejected claims 1-6 and 8-18 under 35 U.S.C. § 112, first paragraph, allegedly requiring enablement of the surface treating agent. Applicants respectfully traverse the Examiners' rejection, maintaining that Applicants specification discloses "[s]urface treating agents that may be used in this invention are, for instance, vinyltrimethoxysilane, vinyltriethoxysilane, N(2-aminoethyl)3-aminopropyl methyldimethoxysilane, 3-

aminopropylethoxysilane, 3- glycidoxypopyl trimethoxysilane, 3-glycidoxypopylmethyl dimethoxysilane. The amount of the surface treating agent used is preferably from 1 to 20 parts, more preferably from 3 to 15 parts, with respect to 100 parts of resin.” See Applicants specification, page 24, lines 18-23. In addition, Applicants respectfully assert the surface treating agent of claims 1-6 and 8-18 are enabled under 35 U.S.C. § 112, first paragraph, since the Examiner stated in the office action that the specification is enabling “for addition of fillers and use of surface treating agents.” See the Office Action.

35 U.S.C. § 103(a)

The Examiner rejected claims 1-12 and 16 and 17 under 35 U.S.C. § 103(a) as allegedly obvious over Gelorme et al. (5,464,726) in view of Christie et al. (5,250,848). Applicants respectfully traverse the Examiner’s rejection maintaining the combination of Gelorme et al. with Christie et al. is an improper combination under 35 U.S.C. § 103(c) stating:

35 U.S.C. § 103(c): “Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.”

Further, the MPEP states “the mere filing of a continuation application [including continuing applications filed under 37 CFR 1.53(b)] on or after November 29, 1999, with the required evidence of common ownership, will serve to exclude commonly owned 35 U.S.C. § 102(e) prior art that was applied in a rejection under 35 U.S.C. § 103 in a patent application.” See MPEP 706.02(l)(1). Applicants respectfully assert that since Gelorme et al. is “subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, [Gelorme et al.] shall not preclude patentability ... where the

subject matter and the claimed invention are, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.” See 35 U.S.C. § 103(c).

Applicants respectfully assert that claims 1-12 and 16 and 17 are in condition for allowance because Gelorme et al. is disqualified as prior art under 35 U.S.C. 103(c), for the following two (2) reasons. First, Application Serial Number 09/471,520, filed 12/23/99, is a CIP of Application Serial Number 08/874,220 filed after Nov. 29, 1999 as a continuation-in-part, qualifying under 35 U.S.C. §103(c). Second, Application Serial Number 09/471,520 and Gelorme et al. (5,464,726) were, at the time the invention of Application Serial Number 09/471,520 was made, owned by International Business Machines (IBM) Corporation. See MPEP 706.02(l)(2) II.

#### Statement Concerning Common Ownership

Applicants respectfully assert Application Serial Number 09/471,520 and Gelorme et al. (5,464,726) were, at the time the invention of Application Serial Number 09/471,520 was made, owned by International Business Machines (IBM) Corporation. See MPEP 706.02(l)(2) II. The MPEP states “this statement alone is sufficient evidence to disqualify [Gelorme et al. (5,464,726)] from being used in a rejection under 35 U.S.C. 103(a) against the claims of Application Serial Number 09/471,520.” See MPEP 706.02(l)(2) II.

#### 35 U.S.C. § 103(a) (continued)

Alternatively, Applicants respectfully traverse the Examiner’s rejection of claims 1-12 and 16 and 17 under 35 U.S.C. §103(a) as allegedly obvious over Gelorme et al. (5,464,726) in view of Christie et al. (5,250,848), maintaining the combination of Gelorme et al. with Christie



et al. is an improper combination under 35 U.S.C. § 103(a) because one skilled in the art would not be motivated to combine Gelorme et al. with Christie et al. Gelorme et al. disclose a photocurable resin composition (See Gelorme et al., Abstract). In contrast, Christie et al. disclose “compositions can be cured at temperatures of less than about 150°C and preferably about 130 °C to about 140 °C in about 2 to about 6 hours and preferably about 4 hours.” See Christie, column 6, lines 47-50. Applicants respectfully assert that claims 1-18 are in condition for allowance under 35 U.S.C. §103(a) because one skilled in the art would not be motivated to look to Christie et al. for *inter alia* a surface treating agent and a polymerizable photoinitiator as in independent claims 1 and 8 and dependent claims depending therefrom or a process comprising *inter alia* adding a surface treating agent and a polymerization photoinitiator as stated in independent claim 7 because Christie et al. teaches or suggests only a surface treating agent and a heat curable composition.

The Examiner rejected claims 1-12 and 16 and 17 under 35 U.S.C. §103(a) as allegedly unpatentable over Ayano et al. (4,383,903) in view of Christie et al. (5,250,848). Applicants respectfully traverse the Examiner’s rejection maintaining that claims 1-12 and 16 and 17 are patentable over Ayano et al. (4,383,903) in view of Christie et al. (5,250,848) because one skilled in the art would not be motivated to combine Ayano et al. in view of Christie et al. because Ayano et al. disclose a photocurable resin composition (See Ayano et al., Abstract). In contrast, Christie et al. disclose “compositions can be cured at temperatures of less than about 150°C and preferably about 130 °C to about 140 °C in about 2 to about 6 hours and preferably about 4 hours.” See Christie, column 6, lines 47-50. Applicants respectfully assert that claims 1-18 are in condition for allowance under 35 U.S.C. §103(a) because one skilled in the art would not be

motivated to look to Christie et al. for *inter alia* a surface treating agent and a polymerizable photoinitiator as in independent claims 1 and 8 and dependent claims depending therefrom or a process comprising *inter alia* adding a surface treating agent and a polymerization photoinitiator as stated in independent claim 7 because Christie et al. teaches or suggests only a surface treating agent and a heat curable composition.

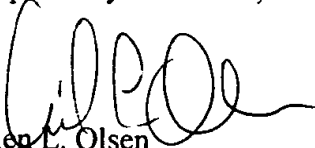
The Examiner rejected claims 1-12 and 16 and 17 under 35 U.S.C. §103(a) as allegedly unpatentable over Gaku et al. (4,533,727) in view of McCormick et al. (5,215,860) and Shimp (4,709,008) and further in view of Christie et al. (5,250,848). Applicants respectfully traverse the Examiner's rejection maintaining that claims 1-12 and 16 and 17 are patentable over Gaku et al. (4,533,727) in view of McCormick et al. (5,215,860) and Shimp (4,709,008) because one skilled in the art would not be motivated to combine Gaku et al. (4,533,727) in view of McCormick et al. (5,215,860) and Shimp (4,709,008) and further in view of Christie et al. (5,250,848) in order to make, use or sell the invention of claims 1-18. Applicants respectfully maintain the Examiner stated Shimp et al. disclose "cyanate ester compositions which can be cured by heat ...." See the Office Action. Applicants respectfully assert that claims 1-18 are in condition for allowance under 35 U.S.C. §103(a) because one skilled in the art would not be motivated to look to Shimp et al. or Christie et al. for *inter alia* tougheners, a surface treating agent and a polymerizable photoinitiator as in independent claims 1 and 8 and dependent claims depending therefrom or a process comprising *inter alia* adding tougheners, a surface treating agent and a polymerization photoinitiator as stated in independent claim 7 because Shimp et al. and Christie et al. teach or suggest only tougheners, a surface treating agent and a heat curable composition.

In light of the foregoing discussion, Applicants respectfully maintain the surface treating agent as in claims 1, 7 and 8 is allowable subject matter under 35 U.S.C. § 132. Applicants respectfully maintain claims 1, 7 and 8 are in condition for allowance under 35 U.S.C. § 112, first paragraph and 35 U.S.C. § 103(a) because Gelorme et al., Ayano *et al.*, Gaku *et al.* in view of McCormick et al., and Shimp et al. further in view of Christie et al. fail to teach or suggest each and every element of Applicants Claims 1, 7 and 8. Since Claims 2-6 each depend from claim 1, and claims 9-12 each depend from claim 8, Applicants respectfully consider claims 1-18 to be in condition for allowance.

### CONCLUSION

Applicants submit that the entire application is in condition for allowance. However, should the Examiner believe anything further is necessary in order to place the application in better condition for allowance, or if the Examiner believes that a telephone interview would be advantageous to resolve the issues presented, the Examiner is invited to contact the Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

  
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## Appendix - Identification of Amended Material

### IN THE CLAIMS:

1. (THRICE AMENDED) A photoinduced polymerizable cyanate ester composition for use in reinforcing a bond, comprising:

a cyanate ester substance comprised of a cationically polymerizable cyanate ester monomer, a cyanate ester prepolymer, or a mixture of the monomer and prepolymer;

an effective amount of modifier for enhancing fracture properties of said bond and for assisting in reinforcing said bond, wherein the modifier includes a toughener;

a filler for controlling thermal expansion of said composition and for assisting in reinforcing said bond[, wherein the filler has been surface treated with an effective amount of];

a surface treating agent; and

a polymerization photoinitiator comprised of a catalytically effective amount of an organometallic complex salt having a metal cation, upon photolysis, said polymerization photoinitiator liberating at least one coordination site and polymerizing the cyanate ester substance, wherein said metal cation in the organometallic complex is selected from the group consisting of elements of Periodic Groups IVB, VB, VIB, VIIB, and VIIIB.

8. (THRICE AMENDED) A lead protective composition comprising the polymerization product of:

(a) at least one cyanate monomer;

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- (b) a polymerization photoinitiator comprised of a catalytically effective amount of an organometallic complex salt having a metal cation, the polymerization photoinitiator liberating at least one coordinative site and polymerizing the at least one cyanate monomer, wherein said metal cation in the organometallic complex is selected from the group consisting of Periodic Groups IVB, VB, VIB, VIIB, and VIIIB[.];
- (c) a filler for controlling thermal expansion of said composition and for assisting in reinforcing said bond[, wherein the filler has been surface treated with an effective amount of surface treating agent]; [and]
- (d) an effective amount of a modifier for enhancing fracture properties of the protective composition as compared to a lead bond formed without a lead protective composition and for assisting in reinforcing said bond, wherein the modifier includes a toughener[.]; and
- (e) a surface treating agent.